

CHAPTER - 5

DEPRECIATION ACCOUNTING

Learning Objectives

After studying this chapter, you will be able to :

- ◆ Grasp the meaning and nature of depreciation.
- ◆ Determine the amount of depreciation from the total value of the fixed assets and its useful life.
- ◆ Understand various methods of depreciation and learn advantages and disadvantages of such methods.
- ◆ To calculate the amount of profit or loss resulting from the sale/ disposal of depreciable assets.
- ◆ Familiarize with the accounting treatment for change in the method of depreciation from Straight Line Method to Reducing Balance method.

1. INTRODUCTION

Fixed assets like plant and machinery etc. are used in the business for the purpose of production of goods or for providing useful services in the course of production. These fixed assets are utilized during operations of a business for a number of successive accounting periods. Value of such fixed assets decreases with passage of time and its utilization i.e. wear and tear. Value of portion of fixed asset utilized for generating revenue must be recovered during a particular accounting year to ascertain true income. This portion of cost of fixed asset allocated to a particular accounting year is called depreciation.

1.1 CONCEPT OF DEPRECIATION

Depreciation has been defined as 'the diminution in the utility or value of an asset, due to natural wear and tear, exhaustion of the subject-matter, effluxion of time accident, obsolescence or similar causes'. The words "accident", "obsolescence" and the phrase "effluxion of time" included in the definition, signify that when an asset held by a business cannot be employed for even one of the purposes for which it was acquired due to some damage suffered, the assets having become out of date or due to no occasion having arisen for it to be used, the loss caused to the business will be depreciation. Depreciation caused by any one of the last mentioned factors often is described as external depreciation, to distinguish it from the natural wear and tear of assets which is known as internal depreciation.

Depreciation

is a measure of wearing out, consumption or other loss of value of a depreciable asset arising from use, effluxion of time or obsolescence through technology and market changes. Depreciation is allocated so as to charge a fair proportion of the depreciable amount in each accounting period during the expected useful life of the asset. Depreciation includes amortisation of asset whose useful life is predetermined'.

'Depreciable Assets'

are those which (i) are expected to be used during more than one accounting period; and (ii) have a limited useful life; and (iii) are held by an enterprise for use in the production or supply of goods and services for rental to others or for administrative purposes and not for the purpose of sale in the ordinary course of business.



The loss in the value of assets employed for carrying on a business being an essential element of business expenditure, it is necessary to calculate the amount of such loss and to make a provision, and therefore, arrive at the amount of profit or loss made by the business.

Basically, the cost of an asset used for purpose of business has to be written off over its economic (not physical) life which necessarily must be estimated. A point to remember is that usually, at the end of the economic life, an asset has some value as scrap or otherwise. The amount to be written off in each year should be as such which will reduce the book value of the asset, at the end of its economic life, to its estimated scrap value.

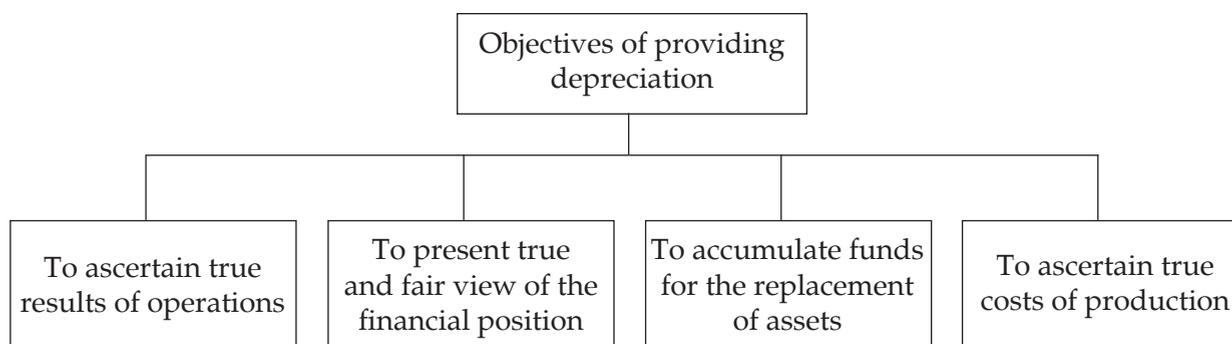
A pertinent question, of course, is the price likely to prevail at the time of replacement. That is why some people advocate the calculation of depreciation on the basis of replacement price rather than cost.

1.2 OBJECTIVES FOR PROVIDING DEPRECIATION

Prime objectives for providing depreciation are:

- (1) *Correct income measurement*: Depreciation should be charged for proper estimation of periodic profit or loss.
- (2) *True position statement*: Value of the fixed assets should be adjusted for depreciation charged in order to depict the actual financial position.
- (3) *Funds for replacement*: Generation of adequate funds in the hands of the business for replacement of the asset at the end of its useful life.
- (4) *Ascertainment of true cost of production*: For ascertaining the cost of the production, it is necessary to charge depreciation as an item of cost of production.

Further depreciation is a non-cash expense and unlike other normal expenditure (e.g. wages, rent, etc.) does not result in any cash outflow. Further depreciation by itself does not create funds it merely draws attention to the fact that out of gross revenue receipts, a certain amount should be retained for replacement of assets used for carrying on operation.

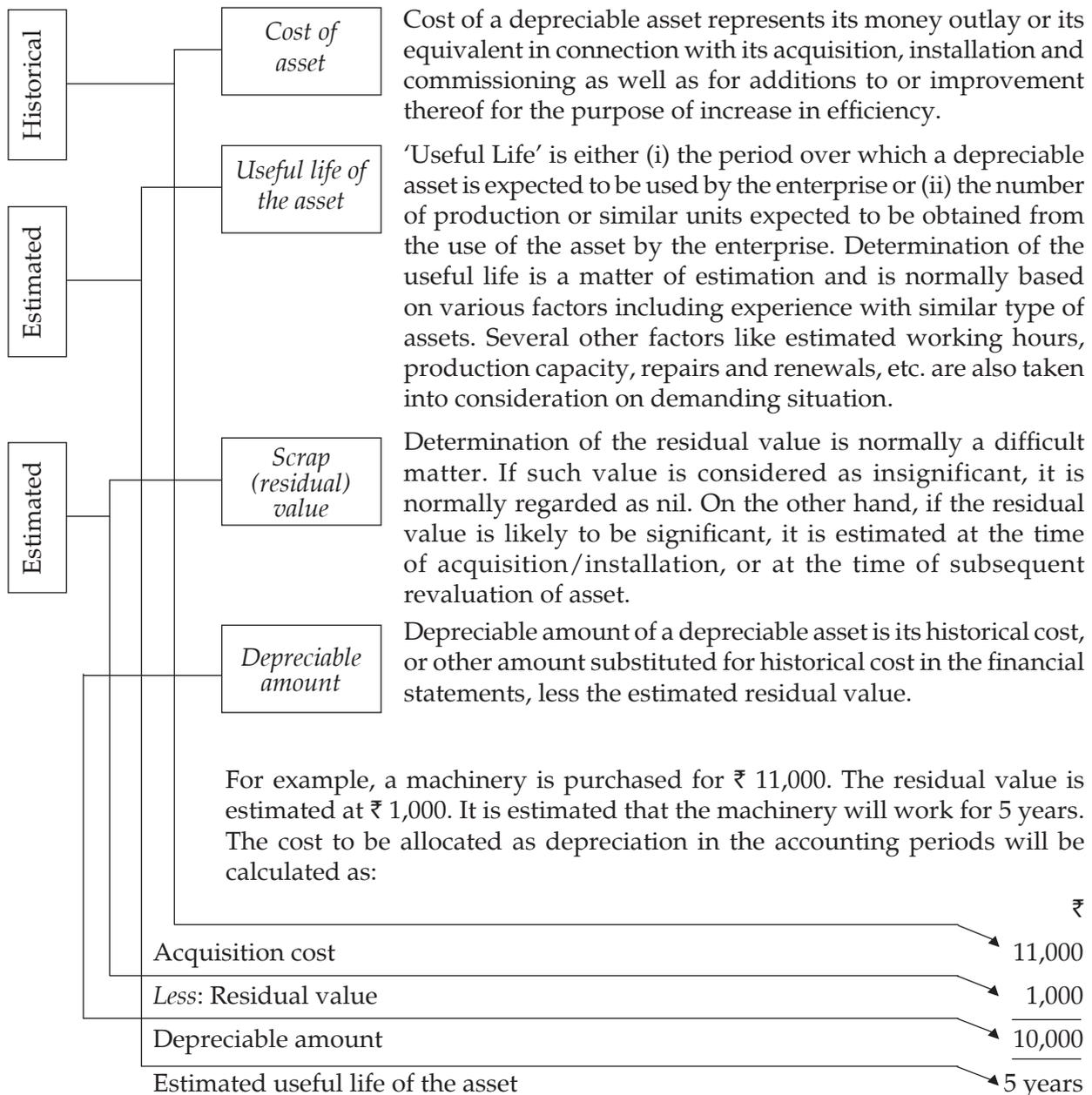


2. FACTORS IN THE MEASUREMENT OF DEPRECIATION

Estimation of exact amount of depreciation is not easy. Generally following factors are taken into consideration for calculation of depreciation.

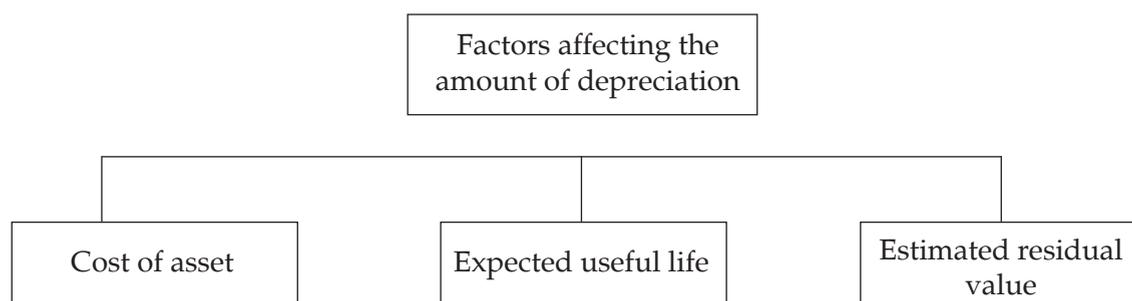
1. Cost of asset including expenses for installation, commissioning, trial run etc.
2. Estimated useful life of the asset.
3. Estimated scrap value (if any) at the end of useful life of the asset.

The above mentioned factors can be explained, in detail, as follows:





$$\text{Depreciation} = \frac{\text{Depreciable Amount}}{\text{Estimated useful life}} \quad \text{i.e.} \quad \frac{\text{₹ 10,000}}{5 \text{ years}} = \text{₹ 2,000 per year}$$



3. METHODS FOR PROVIDING DEPRECIATION

Generally, methods for providing depreciation are based on formula, developed on a study of the behaviour of the assets over a period of years for readily computing the amount of depreciation suffered by different forms of assets. Each of the methods, however, should be applied only after carefully considering nature of the asset and the conditions under which it is being used.

The two most common methods for providing depreciation are the Straight Line Method and the Reducing Balance Method. The Straight Line Method is the most suitable and accurate method to adopt in most cases. The Income Tax Rules, however, prescribe the Reducing Balance Method except in the case of assets of an undertaking engaged in generation and distribution of power.

3.1 STRAIGHT LINE METHOD

According to this method, an equal amount is written off every year during the working life of an asset so as to reduce the cost of the asset to nil or its residual value at the end of its useful life. The advantage of this method is that it is simple to apply and gives accurate results especially in case of leases, patents and copy rights, and also in case of plant and machinery. Calculation of depreciation for additions to plant and machinery may be a complicated affair unless different classes of machines are classified separately in a plant register based on year of additions. This method is also known as Fixed Instalment Method.

$$\text{Straight Line Depreciation} = \frac{\text{Cost of Asset - Scrap Value}}{\text{Useful life}}$$

$$\text{Straight Line Depreciation Rate} = \frac{\text{Straight Line Depreciation}}{\text{Cost of Asset}} \times 100$$

The underlying assumption of this method is that the particular asset generates equal utility during its lifetime. But this cannot be true under all circumstances. The expenditure incurred on repairs and maintenance will be low in earlier years, whereas the same will be high as the asset becomes old. Apart from this the asset may also have varying capacities over the years, indicating

logic for unequal depreciation provision. However, many assets have insignificant repairs and maintenance expenditures for which straight line method can be applied.

3.2 REDUCING BALANCE METHOD

Under this system, a fixed percentage of the diminishing value of the asset is written off each year so as to reduce the asset to its break - up value at the end of its life, repairs and small renewals being charged to revenue. This method is commonly used for plant, fixtures, etc. Under this method, the annual charge for depreciation decreases from year to year, so that the earlier years suffer to the benefit of the later years. Also, under this method, the value of asset can never be completely extinguished, which happens in the earlier explained Straight Line Method. However, it is very simple to operate. The other advantage of this method is that the total charge to revenue is uniform when the depreciation is high, repairs are negligible; and as the repairs increase, the burden of depreciation gets lesser and lesser. On the other hand, under the Straight Line Method, the charge for depreciation is constant, while repairs tend to increase with the life of the asset. Among the disadvantages of this method is the danger that too low a percentage may be adopted as depreciation with the result that over the life of the asset full depreciation may not be provided; also if assets are grouped in such a way that individual assets are difficult to identify, the residue of an asset may lie in the asset account even after the asset has been scrapped. The last mentioned difficulty could be, however, over come if a Plant register is maintained.

The rate of depreciation under this method may be determined by the following formula:

$$1 - \sqrt[n]{\frac{\text{Residual Value}}{\text{Cost of asset}}} \times 100$$

where, n = useful life

Accounting Entries under Straight Line and Reducing Balance Methods :

There are two alternative approaches for recording accounting entries for depreciation.

First Alternative

A provision for depreciation account is opened to accumulate the balance of depreciation and the assets are carried at historical cost.

Accounting entry

Profit and Loss Account	Dr.
To Provision for Depreciation Account	

Second Alternative

Amount of Depreciation is credited to the Asset Account every year and the Asset Account is carried at historical cost less depreciation.

Accounting entries:

Depreciation Account	Dr.
To Asset Account	
Profit and Loss Account	Dr.
To Depreciation Account	



Illustration 1

Jain Bros. acquired a machine on 1st July, 2010 at a cost of ₹ 14,000 and spent ₹ 1,000 on its installation. The firm writes off depreciation at 10% p.a. of the original cost every year. The books are closed on 31st December every year. Show the Machinery Account and Depreciation Account for the year 2010 and 2011.

Solution

As per Straight Line Method

Machinery Account

Dr.		₹	2010		Cr.
2010			2010		₹
July 1	To Bank A/c	14,000	Dec. 31	By Depreciation A/c	
July 1	To Bank A/c - Installation Expenses	1,000		10% on ₹ 15,000 for 6 months	750
			Dec. 31	By Balance c/d	14,250
		15,000			15,000
2011			2011		
Jan. 1	To Balance b/d	14,250	Dec. 31	By Depreciation A/c	1,500
				10% on ₹ 15,000	
			Dec. 31	By Balance c/d	12,750
		14,250			14,250

Depreciation Account

2010		₹	2010		₹
Dec. 31	To Machinery A/c	750	Dec. 31	By Profit & Loss A/c	750
2011			2011		
Dec. 31	To Machinery A/c	1,500	Dec. 31	By Profit & Loss A/c	1,500

Illustration 2

Jain Bros. acquired a machine on 1st July, 2010 at a cost of ₹ 14,000 and spent ₹ 1,000 on its installation. The firm writes off depreciation at 10% p.a. every year. The books are closed on 31st December every year. Show the Machinery Account on diminishing balance method for the year 2010 and 2011.

Solution

As per Reducing Balance Method

Machinery Account

2010		₹	2010		₹
July 1	To Bank A/c	14,000	Dec. 31	By Depreciation A/c	750
	To Bank A/c	1,000		(₹ 15,000 x 10% x $\frac{6}{12}$)	
		<u>15,000</u>	Dec. 31	By Balance c/d	14,250
					<u>15,000</u>
2011			2011		
Jan. 1	To Balance b/d	14,250	Dec. 31	By Depreciation A/c	1,425
				(₹ 14,250 x 10%)	
		<u>14,250</u>	Dec. 31	By Balance c/d	12,825
					<u>14,250</u>

3.3 SUM OF YEARS OF DIGITS METHOD

It is variation of the “Reducing Balance Method”. In this case, the annual depreciation is calculated by multiplying the original cost of the asset less its estimated scrap value by the fraction represented by :

$$\frac{\text{The number of years (including the present year) of remaining life of the asset}}{\text{Total of all digits of the life of the asset (in years)}}$$

Suppose the estimated life of an asset is 10 years; the total of all the digits from 1 to 10 is 55 i.e., 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1, or by the formula:

$$\frac{n(n+1)}{2} = \frac{10 \times 11}{2} = 55$$

The depreciation to be written off in the first year will be 10/55 of the cost of the asset less estimated scrap value; and the depreciation for the second year will be 9/55 of the cost of asset less estimated scrap value and so on.

The method is not yet in vogue in india; and its advantages are the same as those of the Reducing Balance Method.

Illustration 3

M/s Raj & Co. purchased a machine for ₹ 1,00,000. Estimated useful life and scrap value were 10 years and ₹ 12,000 respectively. The machine was put to use on 1.1.2006. Show Machinery Account and Depreciation Account in their books for 2011 by using sum of years digits method.



Solution

In the books of M/s Raj & Co. Machinery Account

Dr.		₹	2011		Cr.
2011					₹
Jan. 1	To Balance b/d (W.N.2)	36,000	Dec. 31	By Depreciation A/c (W.N.3)	8,000
			Dec. 31	By Balance c/d	28,000
		36,000			36,000
2012					
Jan.1	To Balance b/d	28,000			

Depreciation Account

2011		₹	2011		₹
Dec. 31	To Machinery A/c	8,000	Dec. 31	By Profit and Loss A/c	8,000
		8,000			8,000

Working Notes :

(1) Total of sum of digit of depreciation for 2006-2010

$$= (\text{₹ } 1,00,000 - \text{₹ } 12,000) \times \frac{10+9+8+7+6}{\frac{10(10+1)}{2}}$$

$$= \text{₹ } 88,000 \times \frac{40}{55} = \text{₹ } 64,000$$

(2) Written down value as on 1-1-2011

$$\text{₹ } 1,00,000 - \text{₹ } 64,000 = \text{₹ } 36,000$$

(3) Depreciation for 2011

$$(\text{₹ } 1,00,000 - \text{₹ } 12,000) \times \frac{5}{55} = \text{₹ } 8,000.$$

3.4 ANNUITY METHOD

This is a method of depreciation which also takes into account the element of interest on capital outlay and seeks to write off the value of the asset as well as the interest lost over the life of the asset. It assumes that the amount laid out in acquiring asset, if invested elsewhere, would have earned interest which must be reckoned as part of the cost of asset. On that basis, the amount of depreciation to be annually provided in the accounts is ascertained from the Annuity Tables, to write off each year interest on the capital outlay as well as part of the capital sum at a rate that the whole of the capital sum and interest accruing thereon would be written off over the life of the

asset. Though the amount written off annually is constant, the interest in the earlier years being greater, only small amount of the capital outlay is written off. This proportion is reversed with the passage of time. This method is eminently suitable for writing off the amounts paid for long leases which involve a considerable capital outlay. It is not practicable to adopt this method for writing off depreciation of plant and machinery on account of frequent changes in the value of such assets which would necessitate the recalculation of the amount of depreciation to be written off annually.

Relevant Journal entries are:

- (1) For charging interest on asset account

Asset Account	Dr.
To Interest Account	

- (2) For charging depreciation on asset

Depreciation Account	Dr.
To Asset Account	

- (3) For transferring depreciation to Profit and Loss Account

Profit and Loss Account	Dr.
To Depreciation Account	

- (4) For transferring interest to Profit and Loss Account

Interest Account	Dr.
To Profit and Loss Account	

Illustration 4

A lease is purchased on 1st January, 2008 for 4 years at a cost of ₹ 20,000. It is proposed to depreciate the lease by the annuity method charging 5 percent interest. A reference to the annuity table shows that to depreciate Re. 1 by annuity method over 4 years charging 5% interest, one must write off a sum of ₹ 0.282012 [To write off ₹ 20,000 one has to write off every year ₹ 5,640.24 i.e. $0.282012 \times 20,000$].

Show the Lease Account for four years and also the relevant entries in the profit and loss account.



Solution

Lease Account

Dr.		₹	2008		Cr.
2008			2008		₹
Jan. 1	To Bank A/c	20,000.00	Dec. 31	By Depreciation A/c	5,640.24
Dec. 31	To Interest A/c (5% on ₹ 20,000)	1,000.00		By Balance c/d	15,359.76
		21,000.00			21,000.00
2009			2009		
Jan. 1	To Balance b/d	15,359.76	Dec.31	By Depreciation A/c	5,640.24
Dec. 31	To Interest A/c (5% on ₹ 15,359.76)	767.99		By Balance c/d	10,487.51
		16,127.75			16,127.75
2010			2010		
Jan. 1	To Balance b/d	10,487.51	Dec. 31	By Depreciation A/c	5,640.24
Dec. 31	To Interest A/c	524.38	Dec. 31	By Balance c/d	5,371.65
		11,011.89			11,011.89
2011			2011		
Jan. 1	To Balance b/d	5,371.65	Dec. 31	By Depreciation A/c	5,640.24
Dec. 31	To Interest A/c	268.59			
		5,640.24			5,640.24

Profit and Loss Account

2008		₹	2008		₹
Dec. 31	To Depreciation A/c	5,640.24	Dec. 31	By Interest A/c	1,000.00
2009			2009		
Dec. 31	To Depreciation A/c	5,640.24	Dec. 31	By Interest A/c	767.99
2010			2010		
Dec. 31	To Depreciation A/c	5,640.24	Dec. 31	By Interest A/c	524.38
2011			2011		
Dec. 31	To Depreciation A/c	5,640.24	Dec. 31	By Interest A/c	268.59

3.5 SINKING FUND METHOD

If a large sum of money is required for replacement of an asset at the end of its effective life, it may not be advisable to leave in the amount of depreciation set apart annually, for it may or may not be available in the form of the readily realisable assets to the concern at the time it is required. To safeguard this position, the amount annually provided for depreciation may be placed to the credit of the Sinking Fund Account, and at the same time an equivalent amount may be invested in Government securities. The interest on these securities, when received, would be re-invested and the amount thereof would be credited to the Sinking Fund Account. The amount of annual provision for depreciation in such a case is calculated after taking into account interest, that the amounts annually invested shall be earning over the period these will remain invested. When the asset is due for replacement, the securities are sold and the new asset is purchased with the proceeds of their sale. The book value of the old asset, at the time, is transferred to the Sinking Fund Account. Any amount realised on sale of the old asset, as well as the profit or loss on sale of securities, is transferred to the Sinking Fund Account and it is closed off by transfer of the balance of the Profit and Loss Account or General Reserve.

The amount to be set apart annually by way of depreciation is ascertained from Sinking Fund tables. They readily show the amount which must be invested each year to accumulate to Re. 1 at a given rate of interest within the stated period.

Relevant Journal entries are:

- (1) For transfer of depreciation to Sinking Fund
Depreciation Account Dr.
 To Sinking Fund Account
- (2) For charging depreciation to profit and loss account
Profit and Loss Account Dr.
 To Depreciation Account
- (3) For investment of amount of depreciation
Sinking Fund Investment Account Dr.
 To Bank Account
- (4) In subsequent years, for interest earned on sinking fund investment and on investment of the interest and depreciation
Bank Account Dr.
 To Interest on Sinking Fund Investment Account
Interest on Sinking Fund Investment Account Dr.
 To Sinking Fund Account

(In addition to these entries, entries (1) and (2) will also be passed in subsequent years for transfer of depreciation to sinking fund and for charging it to profit and loss account)



- Sinking Fund Investment Account Dr.
 To Bank Account
(yearly depreciation + interest earned)
- (5) For sale of sinking fund investment at the end of useful life of the asset
- Bank Account Dr.
 To Sinking Fund Investment Account
- If sales is at a profit*
- Sinking Fund Investment Account Dr.
 To Sinking Fund Account
- If sales is at loss*
- Sinking Fund Account Dr.
 To Sinking Fund Investment Account
- (6) For transfer of the amount to the extent of book value of the asset from asset account to sinking fund account
- Sinking Fund Account Dr.
 To Asset Account
- (7) Any surplus in Sinking Fund Account may be transferred to General Reserve Account and if any deficit, that may be transferred to Profit and Loss Account
- Sinking Fund Account Dr.
 To General Reserve Account
- OR
- Profit and Loss Account Dr.
 To Sinking Fund Account

The aforementioned method may also be operated a little differently. The amount set apart on account of depreciation, instead of being invested annually in the purchase of government securities may be paid out as premium on a policy maturing at the end of the life of the asset, for an amount equal to the sum that will be required for its replacement. In that case the amount of the premium when paid will be debited to the Policy Account instead of the Investment Account.

Illustration 5

On 1st January, 2009, Z Limited purchased the lease of property for ₹ 10,000. The lease would expire on 31st December, 2011. Z Ltd., decided to set up a sinking fund. The Sinking Fund was to be credited (or debited) with an annual contribution from profit, the interest on the investments and any profits (or losses) made on the realisation of the sinking fund investments. The sinking fund was to be represented by specific investment, and any sums made available to the sinking fund were to be immediately invested, except at the termination of the fund.

During the three years following transactions took place:

2009 31st December: A contribution from profits of ₹ 3,200 was made and this sum was invested.

DEPRECIATION ACCOUNTING

2010 13th July: Investments which originally costed ₹ 1,100 were sold for ₹ 1,200 and the proceeds of sale were re-invested.

2010 31st December: A contribution from profits of ₹ 3,200 was made; interest on investments of ₹ 160 was received and these amounts were reinvested.

2011 9th May: Investments which originally costed ₹ 2,100 were sold at a profit of ₹ 200 and proceeds of sale were re-invested.

2011 31st December: Interest on investments ₹ 480 was received which was not invested. All existing investments were sold for ₹ 6,600. A contribution from profit of an amount required to make up the sinking fund to ₹ 10,000 was made and this amount was not invested.

You are required to prepare Sinking Fund and Sinking Fund Investment Account for the years 2009-2011.

Solution

Sinking Fund Account

2009		₹	2009		₹
Dec. 31	To Balance c/d	3,200	Dec. 31	By Depreciation A/c	3,200
		<u>3,200</u>			<u>3,200</u>
2010			2010		
Dec. 31	To Balance c/d	6,660	Jan. 1	By Balance b/d	3,200
			July 13	By S.F. Investment A/c	100
			Dec. 31	By Interest on S.F. Investment A/c	160
				By Depreciation A/c	3,200
		<u>6,660</u>			<u>6,660</u>
2011			2011		
Dec.31	To S.F. Investment A/c	260	Jan. 1	By Balance b/d	6,660
	To Lease A/c	10,000	May 9	By S.F. Investment A/c	200
			Dec. 31	By Interest on S.F. Investment A/c	480
				By Depreciation A/c (Balancing Figure)	2,920
		<u>10,260</u>			<u>10,260</u>



Sinking Fund Investment Account

2010		₹	2010		₹
Dec. 31	To Bank A/c	3,200	Dec. 31	By Balance c/d	3,200
		3,200			3,200
2010			2010		
Jan. 1	To Balance b/d	3,200	July 13	By Bank (sale)	1,200
July 13	To S.F.A/c (profit on sale)	100	Dec. 31	By Balance c/d	6,660
July 13	To Bank A/c (investment of sale proceed)	1,200			
Dec. 31	To Bank A/c (investment of depreciation amount and interest)	3,360			
		7,860			7,860
2011			2011		
Jan. 1	To Balance b/d	6,660	May 9	By Bank	2,300
May 9	To S.F. A/c (profit on sale)	200	Dec.31	By Bank	6,600
May 9	To Bank A/c (investment of sale proceeds)	2,300	Dec. 31	By S.F. A/c (loss on sale)	260
		9,160			9,160

Illustration 6

On the basis of the data given in the illustration 5, prepare Lease Account and Depreciation Account for the years 2009-2011.

Solution

Lease Account

2009		₹	2009		₹
Jan.1	To Bank A/c	10,000	Dec. 31	By Balance c/d	10,000
		10,000			10,000
2010			2010		
Jan. 1	To Balance b/d	10,000	Dec.31	By Balance c/d	10,000
		10,000			10,000
2011			2011		
Jan.1	To Balance b/d	10,000	Dec. 31	By Sinking Fund A/c	10,000
		10,000			10,000

Depreciation Account

2009		₹	2009		₹
Dec. 31	To Sinking Fund A/c	3,200	Dec. 31	By Profit & Loss A/c	3,200
		<u>3,200</u>			<u>3,200</u>
2010			2010		
Dec. 31	To Sinking Fund A/c	3,200	Dec. 31	By Profit & Loss A/c	3,200
		<u>3,200</u>			<u>3,200</u>
2011			2011		
Dec. 31	To Sinking Fund A/c	2,920	Dec. 31	By Profit & Loss A/c	2,920
		<u>2,920</u>			<u>2,920</u>

3.6 MACHINE HOUR METHOD

Where it is practicable to keep a record of the actual running hours of each machine, depreciation may be calculated on the basis of hours that the concerned machine worked. The machine hour rate of the depreciation, is calculated after estimating the total number of hours that machine would work during its whole life; however, it may have to be varied from time to time, on a consideration of the changes in the economic and technological conditions which might take place, to ensure that the amount provided for depreciation corresponds to that considered appropriate in the changed circumstances. It would be observed that the method is only a slight variation of the Straight Line Method under which depreciation is calculated per year. Under this method it is calculated for each hour the machine works.

Illustration 7

A machine was purchased for ₹ 3,00,000 having an estimated total working of 24,000 hours. The scrap value is expected to be ₹ 20,000 and anticipated pattern of distribution of effective hours is as follows :

Year

- 1 - 3 3,000 hours per year
- 4 - 6 2,600 hours per year
- 7 - 10 1,800 hours per year

Determine Annual Depreciation under Machine Hour Rate Method.

Solution

Statement of Annual Depreciation under Machine Hours Rate Method

Year	Annual Depreciation
1 - 3	$\frac{3,000}{24,000} \times (\text{₹ } 3,00,000 - \text{₹ } 20,000) = \text{₹ } 35,000$



4 - 6	$\frac{2,600}{24,000} \times (\text{₹ } 3,00,000 - \text{₹ } 20,000) = \text{₹ } 30,333$
7 - 10	$\frac{1,800}{24,000} \times (\text{₹ } 3,00,000 - \text{₹ } 20,000) = \text{₹ } 21,000$

3.7 PRODUCTION UNITS METHOD

Under this method depreciation of the asset is determined by comparing the annual production with the estimated total production. The amount of depreciation is computed by the use of following method :

$$\text{Depreciation for the period} = \text{Depreciable Amount} \times \frac{\text{Production during the period}}{\text{Estimated total production}}$$

The method is applicable to machines producing product of uniform specifications.

Illustration 8

A machine is purchased for ₹ 2,00,000. Its estimated useful life is 10 years with a residual value of ₹ 20,000. The machine is expected to produce 1.5 lakh units during its life time. Expected distribution pattern of production is as follows:

Year	Production
1-3	20,000 units per year
4-7	15,000 units per year
8-10	10,000 units per year

Determine the value of depreciation for each year using production units method.

Solution

Statement showing Depreciation under Production Units Method

Year	Annual Depreciation
1-3	$\frac{20,000}{1,50,000} \times (\text{₹ } 2,00,000 - \text{₹ } 20,000) = \text{₹ } 24,000$
4-7	$\frac{15,000}{1,50,000} \times (\text{₹ } 2,00,000 - \text{₹ } 20,000) = \text{₹ } 18,000$
8-10	$\frac{10,000}{1,50,000} \times (\text{₹ } 2,00,000 - \text{₹ } 20,000) = \text{₹ } 12,000$

3.8 DEPLETION METHOD

This method is used in case of mines, quarries etc. containing only a certain quantity of product. The depreciation rate is calculated by dividing the cost of the asset by the estimated quantity of product likely to be available. Annual depreciation will be the quantity extracted multiplied by the rate per unit.

Illustration 9

M/s Jay & Co. took lease of a quarry on 1-1-2009 for ₹ 1,00,00,000. As per technical estimate the total quantity of mineral deposit is 2,00,000 tonnes. Depreciation was charged on the basis of depletion method. Extraction pattern is given in the following table:

Year	Quantity of Mineral extracted
2009	2,000 tonnes
2010	10,000 tonnes
2011	15,000 tonnes

Show the Quarry Lease Account and Depreciation Account for each year from 2009 to 2011.

Solution

Quarry Lease Account

Dr.			Cr.		
2009		₹	2009		₹
Jan.	To Bank A/c	1,00,00,000	Dec. 31	By Depreciation A/c [(2,000/2,00,000)× ₹ 1,00,00,000]	1,00,000
			Dec. 31	By Balance c/d	99,00,000
		<u>1,00,00,000</u>			<u>1,00,00,000</u>
2010			2010		
Jan. 1	To Balance b/d	99,00,000	Dec. 31	By Depreciation A/c	5,00,000
			Dec. 31	By Balance c/d	94,00,000
		<u>99,00,000</u>			<u>99,00,000</u>
2011			2011		
Jan. 1	To Balance b/d	94,00,000	Dec. 31	By Depreciation A/c	7,50,000
			Dec. 31	By Balance c/d	86,50,00
		<u>94,00,000</u>			<u>94,00,000</u>



Depreciation Account

Dr.		₹	2009		Cr.
2009					₹
Dec. 31	To Quarry lease A/c	1,00,000	Dec. 31	By Profit & Loss A/c	1,00,000
		1,00,000			1,00,000
2010			2010		
Dec. 31	To Quarry lease A/c	5,00,000	Dec. 31	By Profit & Loss A/c	5,00,000
		5,00,000			5,00,000
2011			2011		
Dec. 31	To Quarry lease A/c	7,50,000	Dec. 31	By Profit & Loss A/c	7,50,000
		7,50,000			7,50,000

4. PROFIT OR LOSS ON THE SALE / DISPOSAL OF DEPRECIABLE ASSETS

Whenever any depreciable asset is sold during the year, depreciation is charged on it for the period it has been used in the sale year. The written down value after charging such depreciation is used for calculating the profit or loss on the sale of that asset. The resulting profit or loss on sale of the asset is ultimately transferred to profit and loss account.

For example: The book value of the asset as on 1st January, 2011 is ₹ 50,000. Depreciation is charged on the asset @10%. On 1st July 2011, the asset is sold for ₹ 32,000. In such a situation, profit or loss on the sale will be calculated as follows:

	₹
Book value as on 1 st Jan., 2011	50,000
Less: Depreciation for 6 months @10% (from 1 st Jan., 2011 to 30 th June, 2011)	2,500
Written down value as on 1 st July, 2011	47,500
Less: Sale proceeds as on 1 st July, 2011	32,000
Loss on sale of the asset	15,500

Illustration 10

A firm purchased on 1st January, 2010 certain machinery for ₹ 58,200 and spent ₹ 1,800 on its erection. On July 1, 2010 another machinery for ₹ 20,000 was acquired. On 1st July, 2011 the machinery purchased on 1st January, 2010 having become obsolete was auctioned for ₹ 38,600 and on the same date fresh machinery was purchased at a cost of ₹ 40,000.

Depreciation was provided for annually on 31st December at the rate of 10 per cent p.a. on written down value. Prepare machinery account.

DEPRECIATION ACCOUNTING

Solution

Machinery Account

Dr. 2010		₹	2010		Cr. ₹
Jan. 1	To Bank A/c	58,200	Dec. 31	By Depreciation A/c	7,000
Jan. 1	To Bank A/c – erection charges	1,800		By Balance c/d	73,000
July 1	To Bank A/c	20,000			
		<u>80,000</u>			<u>80,000</u>
2011			2011		
Jan. 1	To Balance b/d	73,000	July 1	By Depreciation on sold machine	2,700
July 1	To Bank A/c	40,000		By Bank A/c	38,600
				By Profit and Loss A/c	12,700
			Dec. 31	By Depreciation A/c	3,900
				By Balance c/d	55,100
		<u>1,13,000</u>			<u>1,13,000</u>

Working Note:

Book Value of Machines

	Machine I ₹	Machine II ₹	Machine III ₹
Cost	60,000	20,000	40,000
Depreciation for 2010	<u>6,000</u>	<u>1,000</u>	
Written down value	54,000	19,000	
Depreciation for 2011	<u>2,700</u>	<u>1,900</u>	<u>2,000</u>
Written down value	51,300	17,100	38,000
Sale Proceeds	<u>38,600</u>		
Loss on Sale	<u>12,700</u>		



Illustration 11

A company's plant and machinery account at 31st December, 2011 and the corresponding depreciation provision account, broken down by year of purchase are as follows:

<i>Year of Purchase</i>	<i>Plant and Machinery at cost</i>	<i>Depreciation Provision</i>
1995	20,000	20,000
2001	30,000	30,000
2002	1,00,000	95,000
2003	70,000	59,500
2010	50,000	7,500
2011	30,000	1,500
	<u>3,00,000</u>	<u>2,13,500</u>

Depreciation is at the rate of 10% per annum on cost. It is the Company's policy to assume that all purchases, sales or disposal of plant occurred on 30th June in the relevant year for the purpose of calculating depreciation, irrespective of the precise date on which these events occurred.

During 2012 the following transactions took place:

1. Purchase of plant and machinery amounted to ₹ 1,50,000
2. Plant that had been bought in 2001 for ₹ 17,000 was scrapped.
3. Plant that had been bought in 2002 for ₹ 9,000 was sold for 500.
4. Plant that had been bought in 2003 for ₹ 24,000 was sold for ₹ 1,500.

You are required to:

Calculate the provision for depreciation of plant and machinery for the year ended 31st December, 2012. In calculating this provision you should bear in mind that it is the company's policy to show any profit or loss on the sale or disposal of plant as a completely separate item in the Profit and Loss Account.

DEPRECIATION ACCOUNTING

Solution

Calculation of provision for depreciation of plant and machinery for the year ended 31st December, 2012.

Plant purchased in:		₹	₹
1995		nil	
2001		nil	
2002			5,000
2003	1/2 year at 10% on ₹ 24,000	1,200	
	1 year at 10% on ₹ 46,000	<u>4,600</u>	5,800
2010	10% on ₹ 50,000		5,000
2011	10% on ₹ 30,000		3,000
2012	1/2 year at 10% on ₹ 1,50,000		<u>7,500</u>
			<u>26,300</u>

Illustration 12

Prepare the following ledger accounts during 2012 from the information given in illustration 11 :

- plant and machinery at cost ;
- depreciation provision;
- sales or disposal of plant and machinery.

Solution

(i) Plant and Machinery Account (for 2012) at Cost

	₹		₹
To Balance b/d	3,00,000	By Disposals account:	
To Purchases A/c	1,50,000	Scrapped	17,000
		Sold	33,000
		By Balance c/d	4,00,000
	<u>4,50,000</u>		<u>4,50,000</u>



(ii) Depreciation Provision Account (for 2012)

			₹		₹
	To Disposal Account :			By Balance b/d	2,13,500
	Scrapped - 2001 assets	17,000		By Profit and Loss Account	26,300
	Sold - 2002 assets	9,000			
	Sold - 2003 assets	21,600	47,600		
	To Balance c/d		1,92,200		
			<u>2,39,800</u>		<u>2,39,800</u>

(iii) Sale or disposal of Plant and Machinery Account (for 2012)

			₹		₹
	To Plant and Machinery :			By Provision for Depreciation	47,600
	Scrapped		17,000	By Cash-Sales Proceeds	2,000
	Sold		33,000	By Loss on sales	400
			<u>50,000</u>		<u>50,000</u>

Illustration 13

The Machinery Account of a Factory showed a balance of ₹ 1,90,000 on 1st January, 2012. Its accounts were made up on 31st December each year and depreciation is written off at 10% p.a. under the Diminishing Balance Method.

On 1st June 2012, a new machinery was acquired at a cost of ₹ 28,000 and installation charges incurred in erecting the machine works out to ₹ 892 on the same date. On 1st June, 2012 a machine which had cost ₹ 4,374 on 1st January 2010 was sold for ₹ 750. Another machine which had cost ₹ 437 on 1st January, 2011 was scrapped on the same date and it realised nothing.

Write a plant and machinery account for the year 2012, allowing the same rate of depreciation as in the past calculating depreciation to the nearest multiple of a Rupee.

Solution

Plant and Machinery Account

Dr. 2012		₹	2012		Cr. ₹
Jan. 1	To Balance b/d	1,90,000	June 1	By Bank (Sales)	750
June. 1	To Bank (28,000 + 892)	28,892		By Depreciation (on sold machine)	148
				By Loss on sale	2,645
				By Loss on scrapping the machine	377
				By Depreciation (on scrapped machinery)	16
				By Depreciation (Note iii)	20,291
				By Balance c/d	1,94,665
		<u>2,18,892</u>			<u>2,18,892</u>

Working Note :

(i) Calculation of loss on sale of machine on 1-6-2012

	₹
Cost on 1-1-2010	4,374
Less : Depreciation @ 10% on ₹ 4,374	<u>(437)</u>
W.D.V. on 31-12-2010	3,937
Less : Depreciation @ 10% on ₹ 3,937	<u>(394)</u>
W.D.V. on 31-12-2011	3,543
Less : Depreciation @ 10% on ₹ 3,543 for 5 months	<u>(148)</u>
	3,395
Less : Sale proceeds on 1-6-2012	<u>(750)</u>
Loss	<u>2,645</u>

(ii) Calculation of loss on scrapped machine

	₹
Cost on 1-1-2011	437
Less : Depreciation @ 10% on ₹ 437	<u>(44)</u>
W.D.V. on 1-1-2012	393
Less : Depreciation @ 10% on ₹ 393 for 5 months	<u>(16)</u>
Loss	<u>377</u>



(iii) Depreciation

Balance of machinery account on 1-1-2012		1,90,000
Less : W.D.V.of machinery sold	3,543	
W.D.V. of machinery scrapped	393	(3,936)
W.D.V. of other machinery on 1-1-2012		1,86,064
Depreciation @ 10% on ₹ 1,86,064 for 12 months		18,606
Depreciation @ 10% on ₹ 28,892 for 7 months		1,685
		<u>20,291</u>

5. CHANGE IN THE METHOD OF DEPRECIATION

The depreciation method selected should be applied consistently from period to period. A change from one method of providing depreciation to another should be made only if the adoption of the new method is required by the statute or for compliance with the accounting standard or if it is considered that the change would result in the more appropriate preparation and presentation of the financial statements of the enterprise. Whenever any change in depreciation method is made, depreciation should be recalculated in accordance with the new method from the date of asset coming into use. The deficiency or surplus arising from retrospective recomputation of depreciation should be debited or credited to Profit and Loss account in the year in which the method of depreciation is changed. Such change is treated as change in accounting policy. Its effect needs to be quantified and disclosed.

<i>Example</i> : Cost of Machine	₹ 1,05,000
Residual Value	₹ 5,000
Useful life	10 years

The company charges depreciation on straight line method for the first two years and thereafter decides to adopt written down value method.

In this case: Rate of WDV depreciation (say 'a') would be;

$$a = 1 - \sqrt[10]{\frac{5,000}{1,05,000}}$$

After applying the log and antilog table, the rate of depreciation would be derived as follows:

$$a = 1 - (5,000/1,05,000)^{1/10}$$

$$a = 1 - (1/21)^{1/10}$$

$$\text{Let } (1/21)^{1/10} = a$$

Taking log both sides

$$\text{Log } a = 1/10(\text{log}1 - \text{log}21)$$

$$= 1/10(0 - 1.3222)$$

$$= -0.13222$$

Adding and Subtracting 1 we get

DEPRECIATION ACCOUNTING

bar 1.86778

Taking antilog both sides

a= antilog(bar 1.86778)

= 0.73753

Thus,

1 - 0.73753

= 0.26247 or 26.247%

Depreciation already charged for the first 2 years as per straight line method is ₹ 20,000.

Retrospective computation of depreciation as per WDV method:

Cost of Machine	₹ 1,05,000	
Less : Depreciation for the 1st year @ 26.247%	<u>₹ 27,559</u>	
WDV at the beginning of 2nd year	₹ 77,441	
Less : Depreciation for the 2nd year @ 26.247%	<u>20,326</u>	
WDV at the beginning of 3rd year	₹ 57,115	
Less : Depreciation for the 3rd year @ 26.247%	<u>14,991</u>	
	<u>42,124</u>	
WDV : Depreciation for first two years		₹ 47,885
Less : Depreciation already charged as per straight line method	$\left(\frac{₹ 1,05,000 - ₹ 5,000}{10} \right) \times 2$	(₹ 20,000)
Shortfall		<u>₹ 27,885</u>

Therefore in the profit and loss account of the 3rd year, the short depreciation due to change in the method of depreciation of ₹ 27,885 should be debited. In addition, depreciation as per written down value method for 3rd year of ₹ 14,991, should also be debited.

Illustration 14

A firm purchased on 1st January, 2009 certain machinery for ₹ 52,380 and spent ₹ 1,620 on its erection. On January 1, 2009 another machinery for ₹ 19,000 was acquired. On 1st July, 2010 the machinery purchased on 1st January, 2009 having become obsolete was auctioned for ₹ 28,600 and on the same date fresh machinery was purchased at a cost of ₹ 40,000.

Depreciation was provided annually on 31st December at the rate of 10 per cent on written down value. In 2011, however, the firm changed this method of providing depreciation and adopted the method of providing 5 per cent per annum depreciation on the original cost of the machinery with retrospective effect.



Solution

Machinery Account

2009		₹	2009		₹
Jan. 1	To Bank	52,380	Dec. 31	By Depreciation A/c	7,300
Jan. 1	To Bank-erection charges	1,620		By Balance c/d	65,700
Jan. 1	To Bank	19,000			
		73,000			73,000
2010			2010		
Jan. 1	To Balance b/d	65,700	July 1	By Depreciation	2,430
July 1	To Bank	40,000		By Bank	28,600
				By Profit and Loss A/c	17,570
			Dec. 31	By Depreciation A/c	3,710
				By Balance c/d	53,390
		1,05,700			1,05,700
2011			2011		
Jan. 1	To Balance b/d	53,390	Dec. 31	By Depreciation A/c	2,950
	To Profit and Loss A/c (Excess Dep. written back)	2,710		By Balance c/d	53,150
		56,100			
					56,100

Working Notes :

(1) Book Value of Machines:

	<i>Machine</i> <i>I</i> ₹	<i>Machine</i> <i>II</i> ₹	<i>Machine</i> <i>III</i> ₹
Cost	54,000	19,000	40,000
Depreciation for 2009	5,400	1,900	
Written down value	48,600	17,100	
Depreciation for 2010	2,430	1,710	2,000
Written down value	46,170	15,390	38,000
Sale Proceeds in 2011	28,600		
Loss on Sale	17,570		

DEPRECIATION ACCOUNTING

- (2) Written down value on the basis of 5% depreciation on straight line basis as at 31st Dec., 2010.

	<i>Machine</i> <i>II</i> ₹	<i>Machine</i> <i>III</i> ₹	
Cost	19,000	40,000	
Less : Depreciation for 2 years	1,900		
Depreciation for 1/2 year		1,000	
	<u>17,100</u>	<u>39,000</u>	
Total			<u>₹ 56,100</u>

- (3) The book value appearing in the books is ₹ 53,390; ₹ 2,710 has to be written back to make this figure ₹ 56,100.

Note : The rate of 10% is assumed to be per annum.

Illustration 15

Messers Mill and Wright commenced business on 1st January 2007, when they purchased plant and equipment for ₹ 7,00,000. They adopted a policy of (i) charging depreciation at 15% per annum on diminishing balance basis and (ii) charging full year's depreciation on additions.

Over the years, their purchases of plant have been:

<i>Date</i>	<i>Amount</i> ₹
1-8-2008	1,50,000
30-9-2011	2,00,000

On 1-1-2011 it was decided to change the method and rate of depreciation to 10% on straight line basis with retrospective effect from 1-1-2007 the adjustment being made in the books of account.

Calculate the difference in depreciation to be adjusted in the Plant and Equipment being made in the accounts for the year ending 31st December, 2011.



Solution

Depreciation on written down value basis

		Purchased on Jan. 1, 2007	Purchased on Aug. 1, 2008	Total Depreciation
2007		₹	₹	₹
	Cost	7,00,000		
	Depreciation	1,05,000		1,05,000
	Written Down Value (WDV)	<u>5,95,000</u>	1,50,000	
2008				
	Depreciation	89,250	22,500	1,11,750
	W.D.V.	<u>5,05,750</u>	<u>1,27,500</u>	
2009				
	Depreciation	75,863	19,125	94,988
	W.D.V.	<u>4,29,887</u>	<u>1,08,375</u>	
2010				
	Depreciation	64,483	16,256	80,739
	W.D.V.	<u>3,65,404</u>	<u>92,119</u>	
	Depreciation Charged	<u>3,34,596</u>	<u>57,881</u>	
	Total Depreciation Charged (A)			<u>3,92,477</u>
	Depreciation on straight line basis :			
	Annual Depreciation (10% of original cost)	₹ 70,000	₹ 15,000	
	No. of years for which depreciation is to be charged	<u>4</u>	<u>3</u>	
	Depreciation charged	<u>2,80,000</u>	<u>45,000</u>	
	Total (B)			3,25,000

Difference :

Excess depreciation charged to be adjusted in 2011 (A) – (B) = ₹ 67,477.

Plant and Equipment Account

Dr. 2011		₹	2011		Cr. ₹
Jan. 1	To Balance b/d	4,57,523	Dec. 31	By Depreciation (10% of original cost)	1,05,000
	To Profit and Loss A/c adjustment for depreciation	67,477		By Balance c/d	6,20,000
Sep. 30	To Bank	2,00,000			
		<u>7,25,000</u>			<u>7,25,000</u>
2012					
Jan. 1	To Balance b/d	6,20,000			

6. REVISION OF THE ESTIMATED USEFUL LIFE OF THE DEPRECIABLE ASSET

There should be a periodical review of useful life of the depreciable assets. Whenever there is a revision in the estimated useful life of the asset, the unamortised depreciable amount should be charged to the asset over the revised remaining estimated useful life of the asset.

Illustration 16

M/s. Mayur & Co. purchased a machine on 1.1.2006 for ₹ 20,00,000. Estimated useful life was 10 years and scrap value at the end was expected to be ₹ 2,00,000. On 1.1.2011, the written down value of the machine was revalued to be up by 20%, useful life was re-estimated as 13 years and scrap value as ₹ 2,80,000. The company follows reducing balance method of charging depreciation. Show Machinery Account and Provision for Depreciation Account for the year ended 31.12.2011.

Solution

Machinery Account

Dr. 2011		₹	2011		Cr. ₹
Jan. 1	To Balance b/d	20,00,000	Dec. 31	By Balance c/d	21,26,492
	To Revaluation Reserve	1,26,492			
		21,26,492			21,26,492

Provision for Depreciation Account

Dr. 2011		₹	2011		Cr. ₹
Dec.31	To Balance c/d	14,56,480	Jan. 1	By Balance b/d	13,67,538
			Dec. 31	By Profit and Loss A/c	88,942
		14,56,480			14,56,480

Working Notes:

(1) In the year 2004 : Calculation of rate of depreciation as per WDV method

$$= \left[1 - \sqrt[10]{\frac{2,00,000}{20,00,000}} \right] \times 100$$

After applying the log and antilog table, the rate of depreciation would be derived as follows:

$$= [1 - (1/10 \log 20 - 1/10 \log 200)] \times 100$$

$$= [1 - (1/10 \times 1.3010 - 1/10 \times 2.3010)] \times 100$$



$$\begin{aligned} &= [1 - (.1301 - .2301)] \times 100 \\ &= [1 - (.10)] \times 100 \\ &= [1 - (\text{Antilog} - .10 + 1 - 1)] \times 100 \\ &= [1 - (\text{Antilog bar } 1.90)] \times 100 \\ &= [1 - 0.7943] \times 100 \\ &= .2057 \times 100 \\ &= 20.57\% \end{aligned}$$

(2) Statement of Depreciation

		₹
1.1.2006	Cost of the machine	20,00,000
31.12.2006	Less : Depreciation	4,11,340
1.1.2007	W.D.V.	<u>15,88,660</u>
31.12.2007	Depreciation	3,26,740
1.1.2008	W.D.V.	<u>12,61,920</u>
31.12.2008	Depreciation	2,59,539
1.1.2009	W.D.V.	<u>10,02,381</u>
31.12.2009	Depreciation	2,06,160
1.1.2010	W.D.V.	<u>7,96,221</u>
31.12.2010	Depreciation	1,63,759
1.1.2011	W.D.V.	<u>6,32,462</u>
	Add : Upward Revulation (20%)	<u>1,26,492</u>
		7,58,954
31.12.2011	Depreciation (11.719%* on ₹ 7,58,954)	<u>88,942</u>
1.1.2012	W.D.V.	<u>6,70,012</u>

(3) *In the year 2011 : Calculation of rate of depreciation as per WDV method

$$= \left[1 - \sqrt[10]{\frac{2,00,000}{20,00,000}} \right] \times 100 = 11.719\%$$

7. REVALUATION OF DEPRECIABLE ASSETS

Whenever the depreciable asset is revalued, the depreciation should be charged on the revalued

DEPRECIATION ACCOUNTING

amount on the basis of the remaining estimated useful life of the asset. If there is an upward revision in the value of asset for the first time, then the amount of appreciation is debited to Asset Account and credited to Revaluation Reserve Account. If an asset was earlier revalued downward and later on revalued upward then the appreciation to the extent of earlier downfall is credited to profit and loss account. If there is downward revision in the value of asset then Profit and Loss Account is debited and Asset Account is credited. If an asset was earlier revalued upward and then later on it was revalued downward then the downfall to the extent of earlier appreciation is debited to Revaluation Reserve Account. In case the revaluation has a material effect on the amount of depreciation, the same should be disclosed separately in the year in which revaluation is carried out.

Illustration 17

Consider the following details:

	<i>Machine A</i>	<i>Machine B</i>
Date of Purchase	1.1.2008	1.1.2010
Cost Price (₹)	12,25,000	15,75,000
Realisable Value (₹)	25,000	75,000
Useful Life	10 years	15 years

The machines were subject to depreciation under straight line basis. Calendar year is followed as the accounting year. In 2010, Machine A was revalued upward by ₹ 2 lacs. From 1.1.2011, it is decided to adopt written down value method of depreciation. You are asked to prepare a statement showing depreciation charged on each machine upto 31.12.2011.

Solution

Statement of Depreciation

		<i>Machine A</i> ₹	<i>Machine B</i> ₹
1.1.2008	Cost Price	12,25,000	
31.12.2008	Less : SLM depreciation	<u>1,20,000</u>	
1.1.2009	WDV	11,05,000	
31.12.2009	Less : SLM depreciation	<u>1,20,000</u>	
1.1.2010	WDV	9,85,000	
1.1.2010	Cost Price		15,75,000
	Upward Revaluation	<u>2,00,000</u>	
		11,85,000	
31.12.2010	Less : SLM depreciation		
	<u>11,85,000 – 25,000</u>	1,45,000	1,00,000
	8		
1.1.2011	WDV	<u>10,40,000</u>	<u>14,75,000</u>
31.12.2011	Less : Retrospective effect of change in the method of depreciation	<u>5,42,450</u>	<u>1,89,800</u>
		4,97,550	12,85,200
31.12.2011	Less : WDV depreciation	<u>1,73,147</u>	<u>2,36,477</u>
		3,24,403	10,48,723



Working Notes

(1) WDV Rates :

Machine A
2008 & 2010

$$1 - \left[\frac{25,000}{12,25,000} \right]^{\frac{1}{10}} = 32.2\%^*$$

Machine B
2008 onward

$$1 - \left[\frac{75,000}{15,75,000} \right]^{\frac{1}{15}} = 18.4\%^*$$

2010 onwards

$$1 - \left[\frac{25,000}{7,63,113} \right]^{\frac{1}{8}} = 34.8\%^*$$

(2) Retrospective effect of depreciation

WDV depreciation for 2008

Machine A *Machine B*

3,94,450

WDV depreciation for 2009

2,67,437

WDV depreciation for 2010

2,65,563 2,89,800

9,27,450 2,89,800

Less : SLM depreciation already charged
for the above period

3,85,000 1,00,000

Shortfall

5,42,450 1,89,800

8. PROVISION FOR REPAIRS AND RENEWALS

Expenditure incurred for repairs, renewals and maintenance on plant and machinery may vary over the years during the working life. Thus, for equalising the charge of repairs and renewals, sometimes a Provision for Repairs and Renewals Account is opened. Total of such expenses that may be incurred over the working life is estimated before hand. Average of this expenditure is debited to Profit and Loss Account and credited to Provision for Repairs and Renewals Account irrespective of actual expenses incurred. Every year Provision for Repairs and Renewals Account is debited and Repairs Account is credited for actual expenses incurred. The balance in provision for Repairs and Renewals Account is carried forward and in the end or on sale of the asset, the account is closed by transfer to the Asset Account for any balance left.

Illustration 18

The following particulars are available from the books of a public company having a large fleet of vehicles :

	₹
Balance in Provision for Repairs and Renewals Account as on 31.3.2010	1,15,000
Actual repairs charged/incurred during the year ended	
31.3.2010	75,000
31.3.2011	32,000

* The rate of depreciation has been calculated by applying log and antilog table.

DEPRECIATION ACCOUNTING

The company makes an annual provision of ₹ 40,000 on repairs and renewals.

Draw up the Provision for Repairs and Renewals Account for the years 2009-2010 and 2010-2011.

Solution

Provision for Repairs and Renewal Account

<i>Dr.</i>		₹			<i>Cr.</i>
					₹
31.3.2010	To Repairs A/c	75,000	1.4.2009	By Balance b/d	1,50,000
31.3.2010	To Balance c/d	1,15,000		(Balancing figure)	
		1,90,000	31.3.2010	By Profit and Loss A/c	40,000
					1,90,000
31.3.2011	To Repairs A/c	32,000	1.4.2010	By Balance b/d	1,15,000
31.3.2011	To Balance c/d	1,23,000	31.3.2011	By Profit and Loss A/c	40,000
		1,55,000			1,55,000
			1.4.2011	By Balance b/d	1,23,000

SELF EXAMINATION QUESTIONS

Pick up the correct answer from the given choices:

- Amit Ltd. purchased a machine on 01.01.2008 for ₹ 1,20,000. Installation expenses were ₹ 10,000. Residual value after 5 years ₹ 5,000. On 01.07.2008, expenses for repairs were incurred to the extent of ₹ 2,000. Depreciation is provided @ 10% p.a. under written down value method. Depreciation for the 4th year = _____.
 (a) ₹ 25,000 (b) ₹ 13,000 (c) ₹ 10,530 (d) ₹ 9,477
- Original cost = ₹ 1,26,000; Salvage value = Nil; Useful life = 6 years. Depreciation for the first year under sum of years digits method will be
 (a) ₹ 6,000 (b) ₹ 12,000 (c) ₹ 18,000 (d) ₹ 36,000
- Obsolescence of a depreciable asset may be caused by
 I. Technological changes.
 II. Improvement in production method.
 III. Change in market demand for the product or service output.
 IV. Legal or other restrictions.
 (a) Only (I) above (b) Both (I) and (II) above
 (c) All (I), (II), (III) and (IV) above (d) Only (IV) above



4. Amit Ltd. purchased a machine on 01.01.2011 for ₹ 1,20,000. Installation expenses were ₹ 10,000. Residual value after 5 years ₹ 5,000. On 01.07.2011, expenses for repairs were incurred to the extent of ₹ 2,000. Depreciation is provided under straight line method. Depreciation rate = 10%. Annual Depreciation = ____.
- (a) ₹ 13,000 (b) ₹ 17,000 (c) ₹ 21,000 (d) ₹ 25,000
5. Original cost = ₹ 1,26,000; Salvage value = Nil; Useful life = 6 years. Depreciation for the fourth year under sum of years digits method will be
- (a) ₹ 6,000 (b) ₹ 12,000 (c) ₹ 18,000 (d) ₹ 24,000
6. Which of the following statements is/are false?
- I. The term 'depreciation', 'depletion' and 'amortization' convey the same meaning.
- II. Provision for depreciation A/c is debited when provision for depreciation A/c is created.
- III. The main purpose of charging the profit and loss A/c with the amount of depreciation is to spread the cost of an asset over its useful life for the purpose of income determination.
- (a) Only (I) above (b) Only (II) above
- (c) Only (III) above (d) All (I) (II) and (III) above
7. Original cost = ₹ 1,26,000. Salvage value = 6,000. Depreciation for 2nd year by Units of Production Method, if units produced in 2nd year was 5,000 and total estimated production 50,000.
- (a) ₹ 10,800 (b) ₹ 11,340 (c) ₹ 12,600 (d) ₹ 12,000
8. The number of production of similar units expected to be obtained from the use of an asset by an enterprise is called as
- (a) Unit life (b) Useful life
- (c) Production life (d) Expected life
9. Which of the following is not true with regard to fixed assets?
- (a) They are acquired for using them in the conduct of business operations
- (b) They are not meant for resale to earn profit
- (c) They can easily be converted into cash
- (d) Depreciation at specified rates is to be charged on most of the fixed assets
10. Original cost = ₹ 1,26,000. Salvage value = 6,000. Useful Life = 6 years. Annual depreciation under SLM =
- (a) ₹ 21,000 (b) ₹ 20,000 (c) ₹ 15,000 (d) ₹ 14,000

DEPRECIATION ACCOUNTING

11. Original cost = ₹ 1,26,000. Salvage value = 6,000. Depreciation for 2nd year @ 10% p.a. under WDV method =
- (a) ₹ 10,800 (b) ₹ 11,340 (c) ₹ 15,000 (d) ₹ 14,000
12. Which of the following expenses is **not** included in the acquisition cost of a plant and equipment?
- (a) Cost of site preparation (b) Delivery and handling charges
- (c) Installation costs
- (d) Financing costs incurred subsequent to the period after plant and equipment is put to use.
13. For charging depreciation, on which of the following assets, the depletion method is adopted?
- (a) Plant & machinery (b) Land & building
- (c) Goodwill (d) Wasting assets like mines and quarries
14. If a concern proposes to discontinue its business from March 2011 and decides to dispose of all its assets within a period of 4 months, the Balance Sheet as on March 31, 2011 should indicate the assets at their
- (a) Historical cost (b) Net realizable value
- (c) Cost less depreciation (d) Cost price or market value, whichever is lower
15. In the case of downward revaluation of an asset which is for the first time revalued, the account to be debited is
- (a) Fixed Asset (b) Revaluation Reserve
- (c) Profit & Loss account (d) General Reserve
16. In which of the following methods, is the cost of the asset written off in equal proportion, during its useful economic life?
- (a) Straight line method (b) Written down value method
- (c) Units-of-production method (d) Sum-of-the-years'-digits method
17. The portion of the acquisition cost of the asset, yet to be allocated is known as
- (a) Written down value (b) Accumulated value
- (c) Realisable value (d) Salvage value



On the basis of the information given below answer questions 18 & 19.

Original Cost = ₹ 1,00,000. Life = 5 years. Expected salvage value = ₹ 2,000.

18. Depreciation for 3rd year as per straight line method is
(a) ₹ 12,800 (b) ₹ 19,600 (c) ₹ 20,000 (d) ₹ 20,400
19. Rate of depreciation p.a. = _____.
(a) 20.0% (b) 19.8% (c) 19.6% (d) 19.4%

On the basis of the information given below answer questions 20 to 26.

On April 01, 2010 the debit balance of the machinery account of A Ltd. was ₹ 5,67,000. The machine was purchased on April 01, 2008. The company charged depreciation at the rate of 10% per annum under diminishing balance method. On October 01, 2010, the company acquired a new machine at a cost of ₹ 60,000 and incurred ₹ 6,000 for installation of the new machine. The company decided to change the system of providing depreciation from the diminishing balance method to the straight-line method with retrospective effect from April 01, 2008. The rate of depreciation will remain the same. The company decided to make necessary adjustments in respect of depreciation due to the change in the method in the year 2010-2011.

20. Cost of machinery on 01.04.2008 = _____.
(a) ₹ 5,67,000 (b) ₹ 6,30,000 (c) ₹ 7,00,000 (d) ₹ 7,77,778
21. Depreciation provided in 2008-09 = _____.
(a) ₹ 56,700 (b) ₹ 63,000 (c) ₹ 70,000 (d) ₹ 77,778
22. Depreciation provided in 2009-10 = _____.
(a) ₹ 51,030 (b) ₹ 56,700 (c) ₹ 63,000 (d) ₹ 70,000
23. Depreciation under new method for 2008-09 and 2009-10 = _____.
(a) ₹ 1,33,400 (b) ₹ 1,26,000 (c) ₹ 1,40,000 (d) ₹ 1,55,556
24. Further depreciation to be provided = _____.
(a) ₹ 5,670 (b) ₹ 6,300 (c) ₹ 7,000 (d) ₹ 7,778
25. Depreciation for the year 2010-11 = _____.
(a) ₹ 3,300 (b) ₹ 7,000 (c) ₹ 10,300 (d) ₹ 73,300
26. The balance outstanding to the debit of machinery account as on March 31, 2011 after effecting the above changes was
(a) ₹ 5,45,700 (b) ₹ 5,52,700 (c) ₹ 5,46,000 (d) ₹ 5,49,400

On the basis of the information given below answer questions 27 & 28.

The balance in the accumulated provision for depreciation account of a company as at the beginning of the year 2010-2011 was ₹ 2,00,000 when the original cost of the assets amounted to ₹ 10,00,000. The company charges full 10% depreciation on a straight line basis for all the assets including those which have been either purchased or sold during the year. One such asset costing

DEPRECIATION ACCOUNTING

₹ 5,00,000 with accumulated depreciation as at the beginning of the year of ₹ 1,00,000 was disposed of during the year.

27. Depreciation for the current year is
(a) ₹ 40,000 (b) ₹ 50,000 (c) ₹ 60,000 (d) ₹ 1,00,000
28. The balance of the accumulated depreciation account at the end of the year considering the current year's depreciation charge would be
(a) ₹ 2,20,000 (b) ₹ 1,50,000 (c) ₹ 1,20,000 (d) ₹ 2,50,000

On the basis of the information given below answer questions 29 to 34.

B Limited has been charging depreciation on the straight line method. It charges a full year depreciation even if the machinery is utilized only for part of the year. An equipment which was purchased for ₹ 3,50,000 now stands at ₹ 2,97,500 after depreciating at the rate of 5% on a straight line basis. Now the company decides to change the method of depreciation with retrospective effect. The applicable reducing balance rate for this machinery would be 8% p.a. Assuming that before the effect of this change could be accounted, depreciation for the current year is already charged based on straight line method and is reflected in the depreciated value of ₹ 2,97,500.

29. Straight line depreciation per annum is
(a) ₹ 15,000 (b) ₹ 17,500 (c) ₹ 35,000 (d) ₹ 52,500
30. Number of years for which depreciation has been charged on this basis is
(a) 2 years (b) 3 years (c) 4 years (d) 5 years
31. If 8% depreciation was charged by the reducing balance method, WDV at the end of 1st year was
(a) ₹ 2,72,541 (b) ₹ 2,96,240 (c) ₹ 3,22,000 (d) ₹ 3,60,000
32. If 8% depreciation was charged by the reducing balance method, WDV at the end of 2nd year was
(a) ₹ 2,72,541 (b) ₹ 2,96,240 (c) ₹ 3,22,000 (d) ₹ 3,60,000
33. If 8% depreciation was charged by the reducing balance method, WDV at the end of 3rd year was
(a) ₹ 2,72,541 (b) ₹ 2,96,240 (c) ₹ 3,22,000 (d) ₹ 3,60,000
34. The extra depreciation to be provided based on the changed method during the year is
(a) ₹ 24,959 (b) ₹ 17,500 (c) ₹ 10,500 (d) ₹ 46,763



On the basis of the information given below answer questions 35 to 37.

In the year 2007- 2008, C Ltd. purchased a new machine and made the following payments in relation to it:

	₹	₹
Cost as per supplier's list	5,20,000	
Less: Agreed discount	<u>50,000</u>	4,70,000
Delivery charges		10,000
Erection charges		20,000
Annual maintenance charges		30,000
Additional components to increase capacity of the machine		40,000
Annual insurance premium		5,000

35. The cost of the machine is

- (a) ₹ 5,40,000 (b) ₹ 5,45,000 (c) ₹ 4,70,000 (d) ₹ 5,50,000

36. If depreciation is provided @ 10% p.a. SLM, depreciation for 3rd year will be

- (a) ₹ 54,000 (b) ₹ 54,500 (c) ₹ 47,000 (d) ₹ 55,000

37. If depreciation is provided @ 10% p.a. WDV, depreciation for 3rd year is

- (a) ₹ 43,740 (b) ₹ 44,145 (c) ₹ 38,070 (d) ₹ 44,550

On the basis of the information given below answer questions 38 to 42

A new machine costing ₹ 1 lakh was purchased by a company to manufacture a special product. Its useful life is estimated to be 5 years and scrap value at ₹ 10,000. The production plan for the next 5 years using the above machine is as follows:

Year 1	5,000 units
Year 2	10,000 units
Year 3	12,000 units
Year 4	20,000 units
Year 5	25,000 units

38. The depreciation expenditure for the 1st year under units-of-production method will be

- (a) ₹ 6,250 (b) ₹ 12,500 (c) ₹ 15,000 (d) ₹ 25,000

39. The depreciation expenditure for the 2nd year under units-of-production method will be

- (a) ₹ 6,250 (b) ₹ 12,500 (c) ₹ 15,000 (d) ₹ 25,000

40. The depreciation expenditure for the 3rd year under units-of-production method will be

- (a) ₹ 6,250 (b) ₹ 12,500 (c) ₹ 15,000 (d) ₹ 25,000

DEPRECIATION ACCOUNTING

41. The depreciation expenditure for the 4th year under units-of-production method will be
(a) ₹ 6,250 (b) ₹ 12,500 (c) ₹ 15,000 (d) ₹ 25,000
42. The depreciation expenditure for the 5th year under units-of-production method will be
(a) ₹ 6,250 (b) ₹ 12,500 (c) ₹ 15,000 (d) ₹ 31,250.

On the basis of the information given below answer questions 43 to 47.

Consider the following information:

- I. Rate of depreciation under the written down method = 20%.
II. Original cost of the asset = ₹ 1,00,000.
III. Residual value of the asset at the end of useful life = ₹ 40,960.

43. The estimated useful life of the asset is
(a) 4 years (b) 5 years (c) 6 years (d) 7 years
44. Depreciation for 1st year =
(a) ₹ 20,000 (b) ₹ 16,000 (c) ₹ 12,800 (d) ₹ 10,240
45. Depreciation for 2nd year =
(a) ₹ 20,000 (b) ₹ 16,000 (c) ₹ 12,800 (d) ₹ 10,240
46. Depreciation for 3rd year =
(a) ₹ 20,000 (b) ₹ 16,000 (c) ₹ 12,800 (d) ₹ 10,240
47. Depreciation for 4th year =
(a) ₹ 20,000 (b) ₹ 16,000 (c) ₹ 12,800 (d) ₹ 10,240

On the basis of the information given below answer questions 48 and 49.

On October 1, 2007 two machines costing ₹ 20,000 and ₹ 15,000 respectively, were purchased.

On March 31, 2011, both the machines had to be discarded because of damage and had to be replaced by two machines costing ₹ 25,000 and ₹ 20,000 respectively.

One of the discarded machine was sold for ₹ 10,000 and against the other it was expected that ₹ 5,000 would be realized. The firm provides depreciation @15% on written down value method.

48. Depreciation for the 2009-10 year =
(a) ₹ 2,625 (b) ₹ 4,856 (c) ₹ 4,128 (d) ₹ 3,509
49. The total amount of depreciation written off on the two machines till they were discarded is
(a) ₹ 21,000 (b) ₹ 15,118 (c) ₹ 13,595 (d) ₹ 18,194



On the basis of the information given below answer questions 50 to 52.

In the books of D Ltd. the machinery account shows a debit balance of ₹ 60,000 as on April 1, 2010. The machinery was sold on September 30, 2011 for ₹ 30,000. The company charges depreciation @20% p.a. on diminishing balance method.

50. Depreciation for 2010-11 =

- (a) ₹ 6,000 (b) ₹ 9,000 (c) ₹ 4,800 (d) ₹ 12,000

51. Depreciation for 2011-12 =

- (a) ₹ 6,000 (b) ₹ 9,000 (c) ₹ 4,800 (d) ₹ 12,000

52. Profit / Loss on sale =

- (a) ₹ 13,200 Profit (b) ₹ 13,200 loss (c) ₹ 6,800 profit (d) ₹ 6,800 loss

53. Consider the following data pertaining to M/s. E Ltd. who constructed a cinema house:

Particulars	₹
Cost of second hand furniture	90,000
Cost of repainting the furniture	10,000
Wages paid to employees for fixing the furniture	2,000
Fire insurance premium	1,000

The amount debited to furniture account is

- (a) ₹ 90,000 (b) ₹ 91,000 (c) ₹ 1,00,000 (d) ₹ 1,02,000

54. H Ltd. purchased a machinery on April 01, 2006 for ₹ 3,00,000. It is estimated that the machinery will have a useful life of 5 years after which it will have no salvage value. If the company follows sum-of-the-years'-digits method of depreciation, the amount of depreciation charged during the year 2010-11 was

- (a) ₹ 1,00,000 (b) ₹ 80,000 (c) ₹ 60,000 (d) ₹ 20,000.

55. On August 01, 2008, K Travels Ltd. bought four Matador vans costing ₹ 1,20,000 each. The company expected to fetch a scrap value of 25% of the cost price of the vehicles after ten years. The vehicles were depreciated under the fixed installment method up to March 31, 2011. The rate of depreciation charged up to March 31, 2011 was

- (a) 10.0% (b) 9.0% (c) 8.5% (d) 7.5%

ANSWERS

- | | | | | |
|---------|---------|---------|---------|---------|
| 1. (d) | 2. (d) | 3. (c) | 4. (a) | 5. (c) |
| 6. (b) | 7. (d) | 8. (b) | 9. (c) | 10. (b) |
| 11. (b) | 12. (d) | 13. (d) | 14. (b) | 15. (c) |
| 16. (a) | 17. (a) | 18. (b) | 19. (c) | 20. (c) |
| 21. (c) | 22. (c) | 23. (c) | 24. (c) | 25. (d) |
| 26. (b) | 27. (d) | 28. (b) | 29. (b) | 30. (b) |
| 31. (c) | 32. (b) | 33. (a) | 34. (a) | 35. (a) |
| 36. (a) | 37. (a) | 38. (a) | 39. (b) | 40. (c) |
| 41. (d) | 42. (d) | 43. (a) | 44. (a) | 45. (b) |
| 46. (c) | 47. (d) | 48. (c) | 49. (b) | 50. (d) |
| 51. (c) | 52. (b) | 53. (d) | 54. (d) | 55. (d) |